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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Salvatore Peragine, et al.
Serial No.: 10/519,691
Filed: 12/27/2004
For: STRUCTURE .... CELLS

: Group: 1795

: Examiner: Phasge, Arun S.

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REPLY BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicants are submitting a Reply Brief in response to the Examiner's answer.

Therefore, it is believed Applicants have clearly distinguished from the cited art and Applicants request the Board of Patent Appeals and Interferences to reverse the Examiner's rejections.

Present Claim 1 is directed to a cathodic finger structure for an electrolytic cell. Cathodic finger structure are a well known type of electrode construction, widely used in diaphragm chlor-alkali cells. This type of construction was described in detail on page 3 of the present specification, and is also well-known to Pimlott et al, who criticized this technology in cited US

Patent No. 4,670,123. In column 1, lines 38-41, Pimlott et al disclose that "for a number of years, gaseous chlorine was produced in electrolytic cells wherein an asbestos diaphragm was interposed between finger-like, anodes and cathodes which were interleaved together": the above sentence correctly defines what is meant by finger, finger-like structure in the art, i.e. an electrode (anode or cathode) suitable for depositing a diaphragm separator on its surface and to be assembled in an interleaved configuration. The present invention, in particular, is directed to a finger-like cathode. The cathode of the invention has a hollow body housing a suitably shaped sheet acting as a reinforcing and current distributing element.

Pimlott et al. criticizes the finger-like cathode construction alleging that a construction based on flat ion-exchange membranes has advantages over the interleaved finger geometry which is improved by the present invention (col. 1, lines 41-52). Pimlott goes on saying that their construction (based on flat element and not on interleaved, porous fingers) also includes structural frames, which are improved by their invention. Such frames include an element (plastic member 12 provided with conductive inserts) which the Examiner equates to the current distributing sheet of the instant invention. A first thing that has to be noted is that a person skilled in the art would not use a plastic member to improve electrical current distribution. More importantly, plastic member 12 of Pimlott is not inserted in a cathodic structure, or in an electrode structure whatsoever. Both electrodes of Pimlott et al (36 and 220) are flat elements external to plastic member 12 and housing no element at all (being flat sheets and not hollow bodies). Pimlott therefore fails to teach a cathodic structure (or an electrode structure whatsoever) comprising a hollow body, let alone a hollow body housing a current distributing

element.

The combination of Pimlott and Currey would not lead to the claimed structure, because coating an electrode of the membrane cell of Pimlott with the diaphragm of Currey would just not produce a finger structure comprising a hollow body with a reinforcing and current distributing element housed in its interior. In view of the above remarks, neither Pimlott or Currey taken alone nor a combination of these two documents would lead to the claimed electrode structure.

As regards to the Examiner's Response to Applicants' arguments, the Examiner set forth that Pimlott discloses an improvement on electrolysis cells, also relating to cells employing "hydraulically permeable diaphragms planarly disposed between flat surfaced, parallel, porous electrodes". Applicants note that this citation is curiously misleading, in that Pimlott et al. literally mention "hydraulically permeable diaphragms planarly disposed between flat surfaced, parallel, porous, depolarized anodes and/or cathodes when said anodes and cathodes are mounted at a distance from the fluid impermeable structure of the bipolar electrode which physically separates adjacent electrolysis cells". The present invention is quite obviously not directed to cells having depolarized electrodes, which are porous flat electrode unsuitable for housing a reinforcing element in a hollow body, more importantly, since finger-like electrode structures are used in an interleaved or intercalated geometry (see for instance page 3 of instant application:

"In the diaphragm cell structure, the diaphragm-coated fingers are intercalated with the anodes and the surface thereof can either be in contact with that of the diaphragms or spaced therefrom by few millimeters"), a bipolar electrode physically separating adjacent cells is inherently absent, as one skilled in the art will readily appreciate.

The Examiner states that "merely because Pimlott does not use the word "finger" does not mean that it fails to disclose the structure recited therein". This objection is moot, because Pimlott explicitly mentions the word "finger" in the background section (col. 1 line 40) with the same meaning and in the same context as in the present invention, only to teach away from using it and to illustrate the advantage of a non-finger geometry. The Examiner further states that "the Pimlott patent solves the current distribution, since it uses the same projections (...) as recited in the instant claims". This objection is moot, because the projections of Pimlott are not used inside a cathode structure but externally to each one of the two electrodes 36 and 220. Additionally, while projections are used to transmit electrical current across the cell, one skilled in the art would never use a plastic member as a current distributor according to the meaning disclosed in the instant specification.

As regards to the question "other than the separator used, what are the structural differences that a diaphragm cell would have a membrane cell would not have [and] what portions of the claims recite the structural differences?" the answer is partially given in Pimlott, col. 1 and can be summarized as follows:

A) Membrane cells do not have finger structures (the meaning of "finger" being unambiguous to one skilled in the art of electrolysis cells and being explained both in Pimlott and in the present invention)

B) Electrodes of membrane cells are flat and do not comprise a hollow body that can house a reinforcing current distributor

C) Membrane cell electrodes do not have an internal volume in fluid communication with a perimetrical chamber, said internal volume being delimited by a diaphragm-coated foraminous surface.

Finally, Applicants reiterate that Pimlott does not improve the conductivity of a cathodic structure, because the projections cited by the Examiner are not provided in the cathode and are not even in electrical contact therewith. The above remarks fully address every single point raised by the Examiner.

Therefore, the Board of Appeals is requested to reverse the Examiner's rejections.

Respectfully submitted,

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CAM:mlp
Enclosures